

IN THE CLAIMS:

Claims 1, 9-12, 25, and 27-31 are amended herein. No claims are cancelled or added herein. All pending claims are produced below. In addition, the status of each is also indicated below and appropriately noted as “Original”, “Currently Amended”, “Cancelled”, “New”, “Withdrawn”, “Previously Presented”, and “Not Entered” as requested by the Office.

1. (Currently amended) [[A]] An optical system within a computer mouse for illuminating a target surface, the optical system comprising:

a light source, positioned at a first angle relative to a circuit board, the light source configured for emitting light to illuminate the target surface, the first angle being non-perpendicular to the circuit board; and

a lens having an entrance surface and an exit surface, the entrance surface positioned to gather the light from the light source and the exit surface directing the light onto the target surface, ~~wherein~~ the entrance surface structured with a curvature to refractively shape the gathered light and angled at a second angle different than the first angle to refract the gathered light towards the exit surface ~~emitted by the light source enters the entrance surface and is refracted at a second angle at the entrance surface, passes through the lens, and is refracted at the exit surface,~~ the exit surface structured with a curvature to further refractively shape the gathered light and angled at a third angle different from the second angle to refract the gathered light to illuminate the target surface, the lens further configured to traverse light between the entrance surface and exit surface without total internal reflection.
2. (Cancelled)

3. (Original) The system of claim 1, wherein the lens directs the light onto the target surface using a Fresnel lens.
4. (Original) The system of claim 1, wherein the lens directs the light onto the target surface using a diffractive optical element.
5. (Original) The system of claim 1, wherein the angle between the light source and the circuit board is approximately an angle between 10 degrees and 45 degrees.
6. (Original) The system of claim 1, wherein the light emitted from the light source flows through an opening in the circuit board.
7. (Original) The system of claim 1, wherein the light source protrudes through the circuit board.
8. (Original) The system of claim 1, wherein the lens is wedge-shaped.
9. (Currently amended) The system of claim 1, the curvature of the entrance surface further comprises a ~~curvatures surface~~ toroidal surface for gathering light emitted from the light source.
10. (Currently amended) The system of claim ~~[[9]]~~ 1, wherein ~~curvatures~~ the curvature of the entrance surface ~~is~~ comprises an aspherical surface in shape.
11. (Currently amended) The system of claim 1, wherein the curvature of the exit surface further comprises a ~~curvatures~~ an aspherical surface for spreading light emitted from the light source onto the target surface.
12. (Currently amended) The system of claim 11, wherein the curvature of the ~~curvatures~~ exit surface ~~is~~ comprises a toroidal in shape surface.
13. (Original) The system of claim 1, wherein the system is for use in an optical mouse.

14. (Original) The system of claim 1, wherein the system is for use in an optical trackball.
15. (Original) The system of claim 1, wherein the light source is a light emitting diode.
16. (Original) The system of claim 1, wherein the lens is made from glass.
17. (Original) The system of claim 1, wherein the lens is made from an optical plastic.
18. – 24. (Cancelled)
25. (Currently amended) A method for illuminating a target surface using an illumination system in a computer pointing device, the method comprising:
emitting light from a light source positioned at a first angle relative to a circuit board,
the first angle being non-perpendicular to the circuit board;
~~gathering~~ shaping refractively the emitted light gathered at an entrance surface of a lens, the entrance surface having a curvature for refracting the emitted light;
and
~~refracting the gathered light at the entrance surface at a second angle;~~
~~passing the refracted light through the lens; and~~
refracting the ~~passed light at an exit surface of the lens~~ gathered light at a third angle through an exit surface of the lens, the exit surface having a curvature for further shaping refractively the gathered light, to illuminate the target surface with the light refracted from the exit surface, the light traversing between the entrance surface and exit surface without total internal reflection.
26. (Previously Presented) The method of claim 25, wherein the first angle relative to the surface is approximately between 10 degrees and 45 degrees.

27. (Currently amended) An illumination system in a computer pointing device for illuminating a surface, the illumination system comprising:
- a ~~light emitting~~ means for emitting light, the ~~light emitting~~ means for emitting light structured at a first angle relative to a printed circuit board, the first angle being non-perpendicular to the circuit board; and
- a ~~gathering~~ means for ~~gathering~~ refractively shaping the emitted light gathered from the light source at an entrance surface of a directing means, the entrance surface having a curvature for refracting the gathered light,[[;]]
- a ~~first~~ means for ~~refracting the gathered light at the entrance surface at a second~~ angle;
- a ~~means for passing the refracted gathered light through the means for directing; and~~ [[a]] the means for refracting refractively shaping the passed gathered light at an exit surface of the means for directing at including a third angle through an exit surface, the exit surface having a curvature for refractively shaping further the gathered light, to illuminate the target surface with the light refracted from the exit surface, the means for refractively shaping further configured to traverse light between the entrance surface and exit surface without total internal reflection.
28. (Currently amended) The system of claim 27, wherein the ~~light emitting~~ means for emitting light is a light emitting diode.
29. (Currently amended) The system of claim 27, wherein the ~~light emitting~~ means for emitting light is tilted at an angle of approximately 10 degrees to 45 degrees.

30. (Currently amended) The system of claim 27, wherein the ~~gathering~~ means for gathering the emitted light is a lens positioned to gather the light from the light emitting means.
31. (Currently amended) The system of claim 27, wherein the ~~illumination system is housed in an~~ computer pointing device comprises an optical mouse.
- 32.-58. (Cancelled)